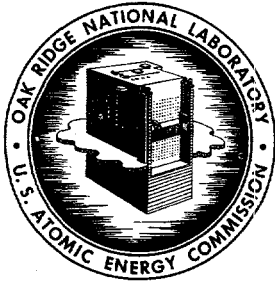


ORNL #306  
MASTER COPY

## OAK RIDGE NATIONAL LABORATORY

Operated by

UNION CARBIDE NUCLEAR COMPANY

Division of Union Carbide Corporation

Post Office Box X  
Oak Ridge, Tennessee

FOR INTERNAL USE ONLY

**ORNL** *gcf*  
**CENTRAL FILES NUMBER**  
**62-3-91**

DATE: March 27, 1962

SUBJECT: Radioactivity in Clinch River Water

TO: A. F. Becher

FROM: K. Z. Morgan

COPY NO. *15*DISTRIBUTION

1. A. F. Becher
2. H. H. Abee
3. F. R. Bruce
- 4-5. W. D. Cottrell
6. J. A. Cox
7. D. M. Davis
8. E. D. Gup-ton
9. J. C. Hart
10. W. H. Jordan
- 11-12. K. Z. Morgan
13. M. J. Skinner
14. W. S. Snyder
- 15-17. Laboratory Records
- 18-19. Central Research Library
20. Document Reference Section

**NOTICE**

This document contains information of a preliminary nature and was prepared primarily for internal use at the Oak Ridge National Laboratory. It is subject to revision or correction and therefore does not represent a final report. The information is not to be abstracted, reprinted or otherwise given public dissemination without the approval of the ORNL patent branch, Legal and Information Control Department.

## HEALTH PHYSICS DIVISION

## RADIOACTIVITY IN CLINCH RIVER WATER

February 1962

Enclosed, Table I, are the results of analysis of the weekly composite Clinch River samples which were collected at the ORGDP water filtration plant intake, by ORGDP personnel, for ORNL.  $(MPC)_w$  values for the mixture have been calculated and are included in this table. Also enclosed, Tables II and III respectively, are the dilution factors in the Clinch River during the period 1/28/62 - 2/25/62 and the radiochemical analysis of White Oak Lake effluent, February, 1962. The per cent of maximum permissible concentration in the river was not significantly different from last month. A total of 217 curies of radioactivity was discharged over White Oak Dam during this period.

TABLE I  
RADIOACTIVITY IN THE CLINCH RIVER AT ORGDP FILTRATION PLANT  
February, 1962

Sample No.	Week Ending	Gross Beta c/m/ml <sup>a</sup>	Gross Alpha c/m/ml <sup>b</sup>	Sr Beta 10 <sup>-8</sup> $\mu$ c/cc	Ru Beta 10 <sup>-6</sup> $\mu$ c/cc	(MPC) <sub>w</sub> <sup>c</sup> 10 <sup>-6</sup> $\mu$ c/cc	% (MPC) <sub>w</sub>
G-97	2-5-62	0.04 $\pm$ 0.005	0.01	0.95 $\pm$ 0.13	0.14 $\pm$ 0.004	1.30	10.4
G-98	2-12-62	0.07 $\pm$ 0.004	0.01	0.90 $\pm$ 0.14	0.22 $\pm$ 0.005	1.96	11.0
G-99	2-19-62	0.06 $\pm$ 0.006	0.01	0.90 $\pm$ 0.14	0.15 $\pm$ 0.005	1.67	10.2
G-100	2-26-62	0.15 $\pm$ 0.006	0.01	1.17 $\pm$ 0.22	0.48 $\pm$ 0.009	2.86	16.5

<sup>a</sup> Gross beta counted at 14.6% geometry based on Ru<sup>106</sup> as a standard.

<sup>b</sup> Gross alpha counted at 52% geometry.

<sup>c</sup> Maximum permissible concentration for populations in the neighborhood of a controlled area.

TABLE II

Dilution Factor in the Clinch River During  
the Period 1/28/62 - 2/25/62

<u>Week Ending</u>	<u>Weekly Average</u>
2-4-62	671
2-11-62	752
2-18-62	680
2-25-62	121

TABLE III

Radiochemical Analyses of White Oak Lake Effluent  
February, 1962

<u>Isotope</u>	<u>% of Total</u>
Ru <sup>106</sup>	89.28
Zr <sup>95</sup>	0.29
Tre-Ce	1.05
Cs <sup>137</sup>	0.77
I <sup>131</sup>	0.05
Ce <sup>144</sup>	0.12
Nb <sup>95</sup>	2.03
Ba <sup>140</sup>	0.02
Co <sup>60</sup>	5.07
Sr <sup>89</sup>	0.14
Sr <sup>90</sup>	1.17

Gross Beta 123 d/m/ml